

acrylic acid 26 to 36 mol%;  
n-butyl acrylate 27.5 to 30.5 mol%;  
methacrylic acid 33.3 to 45.3 mol%;  
allyl methacrylate 0.48 to 0.92 mol%.

Acrylic acid and methacrylic acid are both hydrophilic monomers and n-butyl acrylate is a hydrophobic monomer.

Allyl methacrylate having the following chemical formula,  $\text{CH}_2=\text{CH}-\text{CH}_2-\text{O}-\text{C}(\text{O})-\text{CH}=\text{CH}_2$ , is a bifunctional monomer because of its two polymerizable double bonds and represents the bifunctional unit employed in the film-forming copolymer. Thus, the term "bifunctional" recited in claims 26 and 45 relates specifically to allyl methacrylate monomer and is nothing more than the description of its structure. Therefore, the limitation recited in claims 26 and 45 is clearly supported by the original filed specification.

### **35 USC §103(a) Rejection of Claims 26-35 and 37-39**

The purpose of the present invention is to provide a thickening system capable for satisfactorily thickening or gelling a hairstyling composition based on a specific film-forming polymer (page 2, paragraph 2). This fixing film-forming polymer is a branched block copolymer having a structure consisting of hydrophobic blocks onto which a certain number of more hydrophilic blocks are attached, in particular, via bifunctional units.

It has been observed, during the formulation of hair styling gels, that this film-forming polymer has the disadvantage of considerably fluidifying most conventional thickening systems such as, for example, those based on acrylic copolymers or homopolymers (page 1, last paragraph). Therefore, applicant has found a particular combination of thickening polymers which make it possible to overcome the problems of fluidification and alteration properties of using the gel based on this specific film-forming polymer.

Midha et al relates to a method of making graft polymers comprising:

- (a) copolymerization to form an organic polymeric backbone with pendant organic halide moieties, and
- (b) reacting copolymerizable monomers with the organic halide moieties of the polymeric backbone by atom transfer free radical polymerization in the presence of a special catalyst to form a plurality of polymeric side chains covalently bonded to the polymeric backbone.

This synthesis leads to hydrophilic (i.e., water soluble) graft copolymers or to hydrophobic (i.e., water insoluble) graft polymers (see column 5, lines 6-7). Examples of hydrophilic graft polymers and hydrophobic graft polymers made in accordance with this method of synthesis are given in column 7, line 58 to column 8, line 19 and in column 8, line 62 to column 9, line 11. Furthermore, in Example 17, Midha et al teaches a hair styling gel comprising 2.5 weight percent of graft copolymer and 1.2 and 0.5 weight percent of Carbomer 940 which is an acrylic thickening polymer.

Midha et al does not disclose polymers having a structure comprising hydrophobic blocks onto which more hydrophilic blocks are attached via bifunctional units. Only random copolymers having an important fraction of hydrophilic monomers and hydrophobic monomers both in the polymer backbone and in the side chains are specifically disclosed. For example, methacrylate acid and acrylic acid which are in the polymeric backbone and in the side chains (column 8, lines 8-10). In particular, graft copolymer 1.2 consists namely of important fractions of acrylate and methacrylate acid which are both in the polymeric backbone and in the side chains. Thus, Midha et al does not disclose polymers having the same structure as the herein claimed polymer. Furthermore, Midha et al does not teach specifically that allyl methacrylate is one of the monomers that could be employed in the random copolymer disclosed.

Gebhard et al relates to compositions used in artist, craft and hobby paints, more particularly to compositions having wet state clarity and most particularly to glitter compositions having wet state clarity (column 1, lines 4-7). The technical problem raised in Gebhard et al is the problem associated with conventional glitter compositions which is the dull appearance of the glitter flakes dispersed in such compositions in their wet state. This dull appearance results from the cloudy or milky appearance of the binders typically used in these glitter compositions (column 1, lines 38-42). Therefore, Gebhard et al teaches a composition having wet state clarity comprising:

a first aqueous binder combination of polymer particles having a diameter of less than 80 nanometers and a thickener, or

a second aqueous binder combination of polymer particles having a diameter of less than 120 nanometers and a polyurethane thickener.

The polymer particles may be copolymers of at least one ethylenically unsaturated monomer.

A person of ordinary skill in the art would not have been motivated to replace the graft copolymer 1.2 in the composition of Midha et al disclosed in Example 17 by a copolymer consisting of butyl acrylate, acrylic acid, methacrylic acid and allyl methacrylate supposedly disclosed by Gebhard et al.

Indeed, as mentioned above, the problems of fluidification encountered in hair cosmetic gel compositions are linked to the specific use of the film-forming polymer of the present invention. Example C, page 7 of the present specification, clearly shows that a problem of fluidification occurs in a hair cosmetic gel composition comprising the herein claimed polymer and an acrylic thickening polymer. In fact, the composition is characterized by a low viscosity. Since the graft copolymer 1.2 is different in its structure from the herein claimed polymer, there is no fluidification problems possibly encountered in Example 17 of Midha et al. Therefore, in the absence of a fluidification problem in Example 17, a person of ordinary skill in the art would not have been motivated to replace the graft copolymer 1.2 in this formulation in order to solve this technical problem. Thus, since there is no motivation to replace the graft copolymer 1.2 in Example 17, a person skilled in the relevant art would not have been inclined to consult Gebhard et al.

Furthermore, the technical problem raised by Gebhard et al, which is to improve wet state clarity of glitter composition, is not the same as the one addressed in the present invention. In fact, the improvement of the wet state clarity of a composition is not linked to the increase of its viscosity. Thus, a person of ordinary skill in the art, faced with the technical problem of finding a system of thickening capable to overcome the problems of fluidification of the specific polymer of the present invention, would not have been prompted to consult Gebhard et al.

Moreover, Gebhard et al does not disclose the specific structure of the herein claimed branched block copolymer comprising hydrophobic blocks onto which more hydrophilic blocks are attached via bifunctional units. Only polymer particles consisting of at least one ethylenically unsaturated monomer are disclosed (column 2, lines 37-59). Since Examples 1 and 2 do not disclose polymers having a bifunctional unit, they cannot have the same structure as the herein claimed polymer.

Furthermore, polymers disclosed in Gebhard et al consist of at least one ethylenically unsaturated monomer which may be chosen among a very long list of different types of monomers. Examples 1 and 2 do not disclose polymers comprising butyl acrylate, acrylic acid,

methacrylic acid and allyl methacrylate as a bifunctional monomer. Thus, a person skilled in the art would not have been motivated by Gebhard et al to use the herein claimed branched block copolymer with its specific structure and its specific monomers. Accordingly, it would not have been obvious to a person of ordinary skill in the art at the time the invention was made to employ butyl acrylate, acrylic acid, methacrylic acid and allyl methacrylate as a copolymer in the composition of Midha et al.

Since Gebhard et al does not disclose the same polymer as the one described in the present invention, no fluidification problem would have been encountered by replacing the graft copolymer 1.2 with a polymer disclosed by Gebhard et al. Then, a person skilled in the art would have had no reason to add a second thickener in the composition disclosed in Example 17.

Furthermore, the use of at least two thickening agents, one being an acrylic thickener and the other a non-cellulosic thickener, is neither disclosed nor suggested by Midha et al or by Gebhard et al and a person of ordinary skill in the art would have had no reason to add a second polymer thickener since 0.5 weight % of the acrylic thickener gave a satisfactory gelification of the hair styling gel containing the graft copolymer 1.2 of Example 17 of Midha et al.

#### **35 USC §103(a) Rejection of Claims 41-44**

As mentioned above, Midha et al does not disclose polymers having a structure comprising hydrophobic blocks onto which more hydrophilic blocks are attached via-bifunctional units. Only random copolymers having an important fraction of hydrophilic monomers and hydrophobic monomers both in the polymer backbone and in the side chains are specifically disclosed. Thus, Midha et al does not disclose polymers having the same structure as the herein claimed polymer.

As also mentioned above, since the graft copolymer 1.2 is different in its structure from the herein claimed polymer, there is no fluidification problems possibly encountered in Example 17 of Midha et al. In the absence of a fluidification problems in Example 17, there is no reason that a person of ordinary skill in the art would have been motivated to add a second thickener (co thickener agent) as a guar gum in a cosmetic hair get composition.

**35 USC §103(a) Rejection of Claims 45-48**

As mentioned above, Midha et al does not disclose polymers having a structure comprising hydrophobic blocks onto which more hydrophilic blocks are attached via bifunctional units. Only random copolymers having an important fraction of hydrophilic monomers and hydrophobic monomers both in the polymeric backbone and in the side chains are specifically disclosed.

As also mentioned above, Gebhard et al does not disclose polymers having the same structure as the herein claimed film-forming polymer and does not solve the same technical problem as the one addressed in the present invention. Thus, a person of ordinary skill in the art would not have been inclined to consult Gebhard et al and would not have been able to construct the herein claimed polymer. Accordingly, in the absence of a fluidification problem in Example 17, there is no reason that a person of ordinary skill in the art would have been motivated to replace the graft polymer 1.2 by a copolymer consisting of butyl acrylate, acrylic acid, methacrylic acid and allyl methacrylate and add a second thickener.

In view of the foregoing, early and favorable action is respectfully requested.

A Petition For Extension Of Time is being filed concurrently herewith.

The Commissioner is hereby authorized to charge any fees due in connection with the present Amendment to Deposit Account 19-4293.

Respectfully submitted,

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